

The Committee on Homeland Security, Subcommittee on Transportation and Protective Security and the Committee on Oversight and Government Reform, Subcommittee on Intergovernmental Affairs joint hearing:

**“Innovations in Security: Examining the Use of Canines.”**

Testimony by Cynthia M. Otto, DVM, PhD Executive Director Penn Vet Working Dog Center

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Chairman Palmer, Chairman Katko, and members of the committee, thank you for the opportunity to testify regarding "Innovations in Security: Examining the Use of Canines." on behalf of the Penn Vet Working Center at the University of Pennsylvania.

**Background on PVWDC**

The Penn Vet Working Dog Center is the nation’s premier research and educational facility dedicated to harnessing the unique strengths of our canine partners and producing an elite group of scent detection dogs for public safety and health. The Penn Vet Working Dog Center was developed based on my experience caring for and subsequently monitoring the health of the search and rescue dogs that responded to the 9/11 terrorist attacks. The Penn Vet Working Dog Center opened on September 11, 2012 as the legacy of the dogs that served at 9/11. As pioneers in the working dog field, our goal is to increase collaborative research and the application of the newest scientific findings and veterinary expertise to optimize the availability and performance of lifesaving detection dogs. The Working Dog Center is a living laboratory, where we study and test strategies to optimize canine health and performance. In our program, we start with puppies at 8 weeks of age. These dogs have either been donated to us by breeders who meet our health and performance standards or they have been the result of our breeding program. Our breeding program was started through a cooperative research agreement with DHS in which we were able to obtain the remaining female Labradors from the TSA breeding program that was closed in 2013. This enabled us to continue to work with the genetic stock and build on the progress that had been achieved in the 10 years of the TSA breeding program. Our program is unique in that the puppies come to school every day. They live with foster families on evenings and weekends to help develop the social skills that they will need in careers with canine handlers. During their days of training, we introduce foundation skills, including search, fitness, obedience, and environmental exposure. The puppies are evaluated, data is collected and progress is recorded. We consider their basic schooling to be like a liberal arts degree. As part of our program we then determine the career that each dog is best suited for based on their physical and behavioral attributes. We recognize that each dog is an individual and just like freshmen entering college will gravitate toward a major in which they can be successful, we apply this approach to our dogs. We firmly believe that it is the early training providing a positive learning environment and mitigating any problems before they become entrenched, combined with placing dogs in their

chosen careers ranging from law enforcement patrol to explosive detection to search and rescue to cancer detection that has allowed us to have 42/45 of the dogs completing our program to graduate into detection careers. These careers include 20 Law Enforcement canines (single - explosives or narcotics, or dual purpose – patrol) working at the Federal, state, county and local levels, 6 FEMA Urban Search and Rescue dogs and 4 state or local search and rescue dogs, 2 bed bug detection dogs, 2 private explosive detection dogs, 1 private narcotics detection dog, 1 accelerant detection dogs, 3 diabetes alert dogs and 3 cancer detection dogs. Our 5 years of experience and data collection have led us to several insights that we believe have value in optimizing the use and procurement of detection dogs. Several of these concepts, including the need for a National Center of Excellence for Detection Dogs and a National Breeding Program were also shared in the Senate Homeland Security Committee Hearing on March 3, 2016 (dogs of DHS: How the canine programs contribute to homeland security (S-Hrg. 114-673). The whitepaper describing a proposal for a National Breeding Cooperative was delivered at the US Detection Dog Conference hosted by the American Kennel Club on Mar 1, 2017. A copy of this document is included in the materials for this hearing.

This hearing aims to address three main areas: **Use of Dogs for National Security, Procurement of Dogs and Issues with Supply of Dogs.**

Based on our research across a wide array of relevant topics and our experiences with numerous national, regional, and local canine agencies, industry and academic partners as well as our own program, I will address some of the highlights within these three areas.

### **Use of Dogs for National Security**

Dogs have been well recognized as a force multiplier. Gen. David H. Petraeus, the commanding general of Multi-National Force, Iraq, said, "The capability that military working dogs bring to the fight cannot be replicated by man or machine. By all measures of performance, their yield outperforms any asset we have in our inventory. Our Army would be remiss if we failed to invest more in this incredibly valuable resource." (Feb. 8, 2008)

[https://www.army.mil/article/56965/military\\_working\\_dogs\\_guardians\\_of\\_the\\_night](https://www.army.mil/article/56965/military_working_dogs_guardians_of_the_night)

Dogs are highly efficient in their ability to locate odor and communicate that information. In addition, the presence of a dog at the airport or the train station is a recognized deterrent. In disasters, like the hurricanes and earthquakes of the past month, none of the modern drones or technology can match the efficiency of a trained search and rescue dog in locating victims. Dogs are diverse in their skills and the applications in which dogs support National Security are constantly expanding.

Dogs both direct and indirectly support national security. The most obvious direct application is the explosive detection canine (EDC). There are several different roles for these dogs based on the search environment. Traditional EDCs have been trained to screen stationary objects,

packages and vehicles. The military has expanded search capacity to involve improvised explosive device (IED) detection dogs which work often at a distance from the handler screening roads, hazards and buildings for evidence of IEDs. Passenger screening canines can be used to screen humans as they move through a fixed point or along a specific path or as patented by Auburn University, the “vapor wake” or person-borne dogs will follow a moving person carrying explosives through a crowd. Law enforcement applications of tracking and criminal apprehension are also vital canine roles in local and national security applications.

Many of the other jobs currently performed by detection dogs indirectly support National Security. Narcotics detection dogs are critical in stemming the drug trade. The USDA Beagle Brigade serves by preventing the introduction of threats to agriculture. In response to manmade or natural disasters, search and rescue dogs are vital for saving lives. Human remains detection dogs have a role in criminal investigation and disaster response. Wildlife conservation dogs are invaluable in the battle against smuggling of ivory and other illegal wildlife products. The Penn Vet Working Dog Center is launching a new study to determine if dogs can play a role in combating the illegal antiquities trade that often supports drug or arms trade.

There is also a huge demand for working dogs in other fields. Dogs that could serve in National Security careers may instead be sold to commercial organizations that utilize dogs for bed bug detection or other detection roles or might be sold as hunting or sport dogs. Another competing interest for working dogs is the growing area of medical detection, service and assistance dogs. On the flip side, assistance dog breeding programs often have dogs that are too high energy for assistance work and those dogs may become available for explosive detection or other careers that could support National Security. This potential synergy highlights the need to look broadly at sources of dogs.

Overall there is a great and increasing demand for dogs with the health, behaviors and skills necessary for a wide array working careers and currently there is no comprehensive plan to increase the supply of these invaluable canines or the research to enhance their success.

While dogs are our most effective means, it is important to remember that they are not perfect. Their performance is reliant on appropriate training, good health, teamwork with a handler, and ongoing training. While these are not topics for this hearing, they must be considered in the overall plan to maximize the effectiveness of dogs in National Security. I serve on The National Institute of Standards and Technology (NIST) Organization of Scientific Area Committees subcommittee, Dogs and Sensors, which is working to create National Standards for the care, utilization, training and certification of detection dogs across a wide variety of disciplines based on scientific evidence. There is clearly a need to support the development of rigorous scientific data to develop and validate these standards.

## **Procurement of Dogs**

With the high demand for dogs, one of the challenges faced is how to affordably procure the number of healthy, high quality dogs capable of performing the tasks required. This raises two important points, the first is related to the cost or affordability of dogs and the second is the source of dogs.

When considering the affordability of a detection dog it is important to define the costs. There are several components of the cost of a dog that may be overlooked by simply considering the amount of money paid to purchase a dog. To evaluate the accurate cost of a dog, all of the costs or cost savings should be considered over the career of that dog. If we are to follow the funds from the beginning to the end of a career we can more accurately evaluate the value and true cost of the dog. The first cost even prior to purchasing a dog is the cost of actually identifying potential dogs for purchase. The purchase of dogs from Eastern Europe typically involves travel of staff to evaluate a dog, for dogs purchased from vendors or breeders in the US the cost (personnel, time) of screening the dogs needs to be considered. Once a dog has been selected based on the screening methodology, the purchase price is a clear expense; however, not all dogs that are screened are deemed acceptable to enter or complete a training program; therefore, the cost of time and investment in dogs that eventually fail must also be tracked. The next expense is the training of the dog, if a dog requires a shorter training period before being paired with a handler, that represents a cost savings and conversely if the dog requires remedial training that increases the cost. Medical care is also a cost that must be considered. Dogs with good structure and sound health will represent a cost savings. Dogs with injuries or medical conditions will represent an additional expense resulting from the cost of treatment, lost days of work/training or these dogs may be discharged from the program representing a total loss. The expected working lifespan of the dog should also be considered. Depending on the intensity of the work a dog may be actively employed for 5-8 years. If a dog can enter the workforce at 18 months rather than 24 months of age and remain healthy to work until it is 10 rather than 9, the value of that dog is increased and the overall cost decreased. One of the biggest factors in the cost of the working dog is the cost of the human partner. The time spent training the handler initially is often up to 400 hours for a single purpose detection dog, and twice that time for a dual-purpose dog. In addition, the SWDDOG guidelines (<https://swgdog.fiu.edu/>) have put forth that dogs should have 16 hours a month of ongoing training and NIST is maintaining these recommendations. Canine handlers also require specially outfitted vehicles that should be included in the cost calculation. Finally, the cost of space/housing for the dog should be considered. At the Penn Vet Working Dog Center we are advocates of dogs living with their handlers, but even this incurs an expense. If dogs are kept in a kennel facility, then the infrastructure, utilities, kennel personnel and disease control expenses must be included.

In summary, the initial price of the dog is a small fraction of the total cost of employing a detection canine. Wise choices on the health and training of the dog and selection of the handler can help to reduce the lifetime cost of dogs.

## Source of dogs

The main options for sourcing dogs are imports, domestic breeders, a dedicated breeding program or shelter dogs.

Traditionally, the majority of dogs for the US military and domestic law enforcement agencies have been imported from Eastern Europe. With increased demand on Eastern European resources, Mexico and South America are expanding their breeding of working dogs. One of the main reasons cited for the reliance on imports is the ready availability of affordable working type Shepherds. Despite the fact that the US is the number one producer of Labrador Retrievers, many of the working Labradors are also imported. Challenges faced when relying on importation of dogs from foreign sources stem from a lack of control over factors that could impact the success and availability of these dogs. The availability of imported dogs can be impacted by political instability, disease (e.g Chagas disease in Mexico), or competing demands from countries willing to pay more. The genetics of the imported dogs is rarely documented and therefore systematic improvement in genetics is completely out of the control of the end user. Without knowledge of the genetics, inbreeding and disease propagation risks increase; whereas in a controlled breeding program selective breeding can be utilized to decrease the incidence of crippling diseases like hip dysplasia. One of the common reasons for dogs to fail is lack of environmental stability (e.g. ability to walk on slippery floors, metal stairs, loud noises). Early exposure to new and unusual environments is critical to build the confidence of the dogs, but, this is out of the control of the purchaser for imported dogs. Finally, the world-wide demand for working dogs has put pressure on the supply resulting in lower quality dogs, limited availability and increased price.

Although many Labradors are currently imported, domestic Breeders of predominantly sporting dogs (e.g. Labradors, German Shorthair Pointers etc) do provide many of the dogs currently working as single purpose detection dogs. The greatest challenge is that the goal of these breeders is to produce high end hunting dogs which command top dollar. They are more likely to sell their best dogs to private hunters or sports competitors for a higher price than they could get from the government. One agency that relies on these sources has commented that they are screening hundreds of dogs in order to identify the ones that are appropriate to enter training in explosive detection. This difficulty in obtaining the dogs suggests that dedicated breeding programs that specifically select for the desired traits of explosive detection and other types of working dogs are warranted. Another challenge with purchasing dogs from breeders is that dogs enter training between 12 and 18 months and unless the breeder is training the dogs as gun dogs, the expense of raising the dogs until they are purchased can be prohibitive.

A dedicated Breeding Program would allow for careful selection of the genetic traits that are most desired for the different types of careers. The government experience with breeding programs has not enjoyed the same success as private service dog organizations (e.g. The Seeing Eye, Guiding Eyes), but even with the successful models there is room for improvement. A

single source breeding program is a risk due to disease and environmental hazards. A new concept would be to form a breeding cooperative (see the details in the Appendix) in which many breeders or organizations participate to sell dogs that meet the health, behavior, and genetic requirements. As with the private breeder model, more research is necessary to optimize the selection process. However, if the experience at the Penn Vet Working Dog Center can be replicated (early training and allowing the dogs to be sold to different agencies for diverse careers), the successful placement of the dogs is likely to be high; thereby reducing the cost per dog and the challenge of disposition of dogs that do not meet the criteria. At the Penn Vet Working Dog Center we are exploring models of cost effective early training involving prisons or community programs (e.g. community colleges). For this program to be effective, additional and ongoing research will be necessary.

Finally, many citizens are keen to address the dog overpopulation problem while supporting National Security. This is a valiant effort and may provide some dogs to support the mission as evidenced by some of the shelter based dogs that are currently working. The challenge with this approach is that the health and behavior of these dogs is frequently unknown or unacceptable. Some organizations that focus on shelter dogs have been reported to screen up to 1000 dogs to find 1 suitable candidate. The expense of this approach makes it unsuitable for a primary source of dogs.

Unfortunately, we do not have time to address the Screening and Training of Dogs that would further contribute to the success. But hope that these topics will be the focus of future hearings.

### **Issues with Supply of Dogs**

It is currently impossible to determine the total number of working dogs in this country. Estimates have ranged from 10,000 to 40,000. What is clear is that there is a need to replace dogs as they retire and the demand for dogs for new programs is increasing. Many of the key issues with dogs obtained based on the source of procurement have been defined above. A critical factor in expanding the capacity of dogs serving National Security is that any increase in demand is unlikely to be filled quickly. Because there is not a readily available surplus of dogs, to increase production of dogs, the lead time is approximately two years. This lag time is based on the time required to breed and raise these dogs for the type of work. If dogs can enter the workforce earlier and work effectively longer, then the overall demand for replacements will decrease. Another unknown factor is the future applications that will further increase the demand for dogs that meet the criteria for detection work.

### **Conclusions**

In conclusion, thank you for this opportunity to present the research and experience of the Penn Vet Working Dog Center, and the vision that we see for a viable solution to improve the availability and success of working dogs supporting our national security. We firmly believe that

the application of sound scientific principles to all aspects of dog selection, training and deployment will enhance National Security in an efficient and cost effective manner. To achieve the full potential, a federally hosted collaboration between academic institutions, government agencies, organizations, breeders and industry to create a National Detection Dog Center of Excellence is critical. This Center of Excellence would research, validate and disseminate best practices to advance the scientific approach to dog selection, care and training. Furthermore, to address the impending crisis of detection dog availability, a new and cooperative model of detection dog breeding, early training and distribution must be critically evaluated. We look forward to continuing our collaborations and research in support of this vital mission and welcome your questions and comments.

Respectfully submitted,



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#### **PVWDC Contact and Staff and Collaborator Acknowledgements**

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